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SOUR CREAM POWDER

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25 Claims

ABSTRACT OF THE DISCLOSURE

Sour cream powder is prepared by adding a coating assisting agent selected from the group consisting of gum acacia, gum tragacanth, corn, wheat and potato starches, acid modified starches, phosphated starches, enzyme modified starches of the previous group, dextrins, pectins, carboxymethyl cellulose, nonfat milk solids, gelatin and casein, homogenizing the mixture and spray drying. Preferably a phosphate is added as a protein peptizing agent. The products with or without the peptizing agent are readily redispersible in water to give stable emulsion.

The present application is a continuation-in-part of Ser. No. 825,675, filed July 8, 1959 and now abandoned; Ser. No. 16,652, filed Mar. 22, 1960, Ser. No. 149,537, filed Nov. 2, 1961 and now abandoned, and Ser. No. 197,837, filed May 28, 1962, and now abandoned.

This invention relates to a sour cream powder in which the fat is encapsulated and the powder can be readily reconstituted with water into a smooth cream.

Sour cream is a conventional cultured product with a pH of about 4.4 to 5.0. We have discovered that by adding about 0.5 to 5.0% based on the dry weight of the sour cream of peptizing agent for the protein, notably a salt such as disodium acid phosphate, the insoluble or denatured casein is changed so that it will coat, i.e., enrobe the fat particles, and will not precipitate out when the sour cream is pasteurized, homogenized to disperse finely and coat the fat particles and avoid fat rise, and spray dried to a powder. We have also found that the use of coating assisting agents as hereinafter defined and especially gum acacia and nonfat milk solids will also coat the fat particles and give a spray dried product which is readily redispersible in water with or without the addition of a peptizing agent.

Example 1

Sour cream suitably cultured by conventional procedure having a pH of about 4.6 has added to it 2.5% of a peptizing agent which was disodium acid phosphate based on the dry weight of the sour cream. The mass is suitably mixed with a mechanical paddle agitator, homogenized under about 750 pounds pressure and spray dried. The peptizing agent increases shelf life, i.e., cuts down staling effect and retards rancidity. The protein is peptized because in the conventional sour cream it has been denatured and hence will not adequately enrobe the fat in its insoluble state when the mixture is subsequently spray dried to a powder. This is accomplished by use of the peptizing agent, thereby overcoming the aforesaid previous difficulty.

Example 2

Example 1 was repeated using sour cream with a pH of 4.4.

Example 3

Example 1 was repeated using sour cream with a pH of 5.0.

Example 4

Each of Examples 1, 2 and 3 was repeated using (a) 2.0% of the peptizing agent and (b) 3.0% of the peptizing agent respectively.

Example 5

Each of the previous examples was repeated homogenizing at (a) 200 p.s.i. and (b) 1500 p.s.i. pressure, respectively. Homogenization breaks down and disperses the fat particles and enrobes the same, and helps to avoid fat rise.

Example 6

Each of the previous examples was repeated, including in the mixture a coating agent, namely, a gum such as gum acacia and corn starch respectively, these agents rendering the mix smooth and easily dryable and reconstitutable with water into a smooth cream. The coating agent is able to encapsulate or enrobe the butter fat. The product would otherwise be hard to dry and the coating agent aids spray or roller drying as ordinary sour cream is difficult to dry.

Example 7

Each of the foregoing examples was repeated and the mixtures were pasteurized at (a) 130° F., (b) 140° F., (c) 150° F. and (d) 160° F. for 30 minutes respectively in the batch prior to homogenizing which latter was carried out at substantially the respective temperatures recited at which pathogenic bacteria will be killed.

Example 8

Each of the foregoing examples was repeated using short time pasteurization respectively at (a) 150° F. for 40 seconds, (b) 160° F. for 15 seconds, and (c) 165° F. for 10 seconds, i.e., for 10 to 40 seconds prior to homogenizing, which latter was carried out at the respective temperatures mentioned, or the mix was cooler to be at lower temperatures as recited in the previous example.

Examples 9, 9a, 9b

In Example 1, instead of disodium acid phosphate, 2.5% of a coating material such as referred to in Example 6 was added, namely, in Example 9, gum acacia, and in a second Example, 9a, a starch. The coating material, although not as effective as disodium acid phosphate, will make the product dryable, by extending the coating capacity of the protein as well as acting as a coating material by itself. In a further Example 9b, mixtures of these coating materials were used in about equal parts. The spray dried products of each of Examples 9, 9a and 9b were readily redispersible in water to give stable suspensions.

Example 10 and related examples

In these examples we produced a spray dried, free-flowing sour cream powder by proceeding according to Example 1 using a peptizing agent, namely, disodium acid phosphate, a coating agent, namely, gum acacia, and an added protein, namely, gelatin. Instead of the disodium phosphate, we carried out examples using one of sodium acid pyrophosphate, tetrasodium pyrophosphate, dipotassium phosphate, potassium polymeta phosphate, potassium polyphosphate and diammonium phosphate, respectively, and mixtures of the various peptizing agents disclosed.

Instead of gum acacia, we used one of gum tragacanth, corn, wheat and potato starches, phosphated starches, acid modified starches, enzyme modified starches of the previous group, dextrins, pectins, whey solids, and carboxymethyl cellulose, respectively, and mixtures of the various coating agents recited.